Analysis of Facility Integration: Second Report

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Highlights

In response to a request from the Under Secretary for Health, the HSR&D Management Decision and Research Center (MDRC) studied the implementation and effectiveness of facility integration in VHA to offer management lessons to other integrating facilities. This is the second report from that study. It focuses on the structure of the integrating systems and the effects of integration on system performance. The analyses are based on data from three sources: a survey of integrated system directors; a survey of managers in 19 integrated systems; and administrative data for integrated systems and selected comparison facilities. Among the key conclusions, we find that:

1. **Most integrated systems have made substantial progress toward structural integration.**

- From the directors' reports in April 1999, 16 of the 21 systems were organizationally integrated with a new organizational chart approved, and with both clinical and administrative service chiefs in place.
- Eleven of those systems had taken further steps toward operational integration to align the work of front-line staff across campuses by consolidating medical by-laws and by standardizing administrative and clinical policies.

2. **Systems with central headquarters tend to integrate more quickly and extensively than other systems.**

- The creation of a system headquarters – a location where more than half of the system leadership and service chiefs are physically based – appears to reflect post-integration dominance with one campus clearly in the lead. The centralization of top management, in addition to facilitating interaction among managers through physical proximity, appears to signal a decisiveness about moving ahead to integrate the system beyond the administrative link of a single name and director. Systems with leadership spread across campuses, at least in some cases, appear not to reflect a managerial philosophy of equal partnership across campuses so much as indecision about fully integrating the system.
- The pattern of quicker and more extensive integration holds both as measured in directors' reports of milestones passed and in managers' reports of services remaining separate across campuses and services with the same policies across campuses.

3. **Facility integration appears to have modest effects on system performance.**

   Across measures, integrating systems did not show large changes in performance after integration or different rates of change when compared with non-integrating hospitals for

analyses included systems approved for integration before October 1997 and were based on data from FY1994 through FY1998. Comparison hospitals were drawn from the same Medical Center Groups (MCG) as the integrating facilities.

- ***Integrated systems significantly improved their staffing efficiency after integration and improved it more than comparison groups.*** Other measures of efficiency and redirection of resources to clinical care, while not showing significant differences, also showed improvement: All cost-related measures of efficiency and redirected resources were significantly weaker in integrating facilities than comparison hospital before integration – despite having the comparisons drawn from the same MCG. After integration, however, the differences were fewer and smaller. Integration may have been a key element in enabling the facilities to bring their staffing and cost performance closer in line with more efficient medical centers. Without integration, their performance might instead have declined.
- ***Both integrated and comparison systems significantly reduced their access problems after integration.*** Although integrated systems did not outperform comparison groups, the finding of fewer access problems reported in the Customer Satisfaction Survey after integration was positive. An early concern in many integrating systems was that veterans might feel that integration reduced their access by consolidating to one campus services that had previously been provided at all. These concerns did not show up here.
- ***Integrated systems matched or exceeded comparison groups on primary care enrollment and patient satisfaction with continuity both before and after integration***. On these measures, comparison groups showed significantly greater improvements after the integration date, but those improvements simply brought them into line with the integrating systems which had better pre-integration performance.
- ***Systems that have integrated extensively showed slightly stronger efficiency improvements.*** We expected operationally-integrated systems – those with policies shared across campuses in more than 80% of their services – to show stronger results than the full group of integrated systems because they were integrated more extensively. We found a stronger effect on staffing efficiency, but not different patterns in other areas.
- ***The passage of time did not ensure stronger effects on system performance.*** We expected older integrating systems to show stronger results as the integration had more time to settle in. However, when we looked only at systems approved for integration before October 1996, our expectations were not confirmed: the older systems showed results similar to the larger group; if anything, they were slightly weaker.

These modest effects on performance should be considered in the context of the high costs of facility integration in terms of its disruption to the facilities involved – the anxiety that accompanies large-scale organizational change, distraction from patient care, and investment in the transition. System leaders may want to explore alternative strategies for accomplishing the same efficiencies, service consolidations and access and quality improvements without fully merging their facilities.

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ANALYSIS OF FACILITY INTEGRATION: SECOND REPORT

1. Introduction

Since January 1995, 48 VA medical centers have joined to create 23 integrated healthcare systems across the country. The most recent integration, joining the Brooklyn and New York VAMCs to form the New York Harbor Health Care System, was approved in January 1999. With VA making large investments in integrating facilities, the Under Secretary for Health asked the HSR&D Management Decision and Research Center (MDRC) in March 1996 to study the implementation and effectiveness of facility integration in VHA to offer management lessons to other integrating facilities.

Behavior in Sepulveda, issued a report on our analysis of 14 VA healthcare systems that were approved for integration between January 1995 and November 1996. That report provided detailed analyses of the processes and structures of integration in those systems, with some preliminary evidence on integration effects.
This report continues the MDRC analyses. It includes a broader group of integrating systems and focuses on the structure and effects of integration. The report addresses three sets of questions:

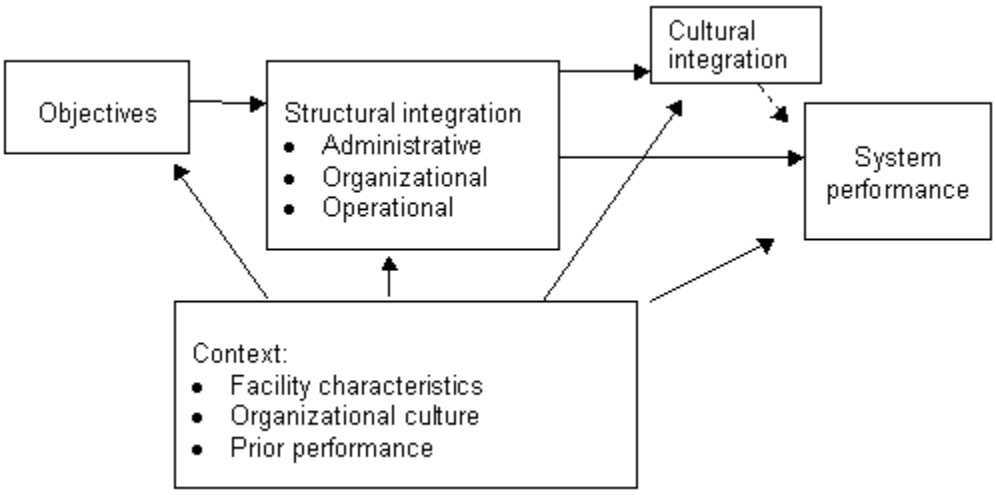
- What is the status of the VA integrating systems: How far have they progressed in integrating the previously separate medical centers?
- What do the integrating systems look like: How are they structured to reach their integration objectives? Do they operate as a system?
- What are the effects of integration on system performance?

1.1 Conceptual model

As a framework for answering these questions, we begin with the conceptual model in Exhibit 1.1. Looking at this model, we expected that:

- The **objectives** of integration – what a system seeks to accomplish in joining two independent medical centers – would determine, at least in part, the structure of the new system.
- The **structure** – both the **organizational** framework for the system, including the location of top management, the roles of each campus, and the structures of the individual administrative and clinical services, and the **operational** framework of policies, procedures and clinical protocols across campuses – would influence *cultural integration* and the *effects* of integration.
- The system would achieve a level of **cultural integration** – defined for purposes of this analysis as employee identification with the system rather than their individual campus. Cultural integration is a signal that systems are integrated in ways that make a difference to employees. System identification is a mediating variable. We assumed that it is an intermediate effect of *structural* integration, and while we did not expect system identification per se to affect outcomes, it signals a level of "real" integration that we did expect to influence effects.
- The **effects,** or **system performance** would reflect the success of the integrated system in meeting its objectives – in VA's case in terms of efficiency, redirecting resources to clinical care, patient access and single standards of care.
- The **context** of integration – primarily the organizational characteristics of the participating facilities, their organizational cultures and their prior performance – would influence virtually all aspects of the integration including the *objectives, structural integration, cultural integration* and *system performance.*

Exhibit 1.1 Model of Facility Integration



Consistent with this model, we concluded in our first report that:

- The pre-integration characteristics of the participating facilities strongly influence structural integration: systems with a dominant partner (a larger, more complex, affiliated medical center joining with a small community or specialty hospital) are more likely to integrate their structures and operations more quickly than systems with relatively equal partners.
- Following integration, systems with a central headquarters and a high proportion of services that are consolidated or combined across campuses are more likely to report positive impacts of integration in their clinical care and management than systems with managers divided across campuses and with high proportions of services operating independently on each campus.

The findings presented in this report allow us to refine our conclusions from the first report and expand our conceptual model of the structure and impact of facility integration.

1.2 Data sources

We use three data sources in this report:

- A survey of directors of all VHA systems integrated since January 1995; the survey was initially administered in November 1998 and updated in April 1999; directors in 21 of 23 systems responded to the survey.

- Survey of managers in 19 integrated systems; the surveys were administered between June 1998 and January 1999 as part of a national organizational and quality improvement survey conducted by the MDRC. 305 managers (66% of those surveyed) responded to the survey, with individual system totals ranging from 7 to 25.
- VA administrative databases for characteristics and integration effects of the 23 integrated systems created since 1995.

Appendix A lists the 23 integrated systems by the month the integration was approved and indicates the data available for each. The Appendix also provides more details on the data sources and analyses.

1.3 Report overview

The report is organized in nine sections following this one:

- Sections 2 and 3 provide the background for the analysis by summarizing the objectives of the integrating systems and the pre-integration characteristics of the participating facilities.

- Section 4 documents the progress of the systems toward structural integration against common milestones on three dimensions: administrative, organizational, and operational integration.

- Within this broad framework of progress, Section 5 looks in more detail at the organizational and operational integration of the systems to provide a description of the integrating systems and analyze factors that explain some of the differences among the systems.
- Section 6 looks at cultural integration as measured by system identification.
- Sections 7 and 8 analyze the effects of facility integration based on both perceptions of integration participants and objective measures from VA databases.

- Section 9 presents conclusions from the study and lessons learned.

2. System Characteristics

Overall, the integrating systems include a diverse group of medical centers, as shown in Exhibit 2.1. Building on our earlier finding that the pre-integration characteristics of the participating facilities strongly influence structural integration, we classified systems as either dominant-partner -- systems in which the facilities are dissimilar in a combination of size, complexity, academic affiliation and proportion of non-acute beds -- or equal-partner – systems in which the facilities were similar on those dimensions.

Among the 13 older integrating systems that we studied earlier, nine were dominant and four were equal. Frequently among those early integrations a large, complex hospital integrated with a much smaller specialty or community hospital.

Among the 10 recent integrating systems that we are studying for the first time, the majority are also between larger, more complex facilities and smaller community or specialty facilities. Of the 10 integrations approved after fiscal year 1996, 6 were dominant and 4 were equal. In a few systems we have labeled dominant, both hospitals are fairly small and of limited complexity; however, within the pairing, one of the hospitals seems clearly larger, more complex and with a lower proportion of non-acute beds. Also to be noted among the later integrations, both Boston and New York Harbor have extensive affiliations with different medical schools. Chicago is the only other integrating system with two strong affiliates.

The distance between facilities varies from 5-7 miles in urban areas to over 350 miles in Montana.

Exhibit 2.1 System Characteristics

			Impatient	**Impatient**				
			Admissions:	**Admissions:**	**Complexity**		**Pre-integration**	**Distance**
			Ratio of	**Number in**	**Score: Larger**	**Extent of**	**Specialization:**	**Between**

			Ratio of	Number in	Score: Larger	Extent of	Specialization:	Between
	Integration	System	Smaller to	Larger	Facility/Smaller	Academic	% of Non-acute	Facilities
System	Date	Dominance	Larger Facility	Facility	Facility	Affiliation	Beds	in Miles
Palo Alto	Jan-95	D	0.13	10,389	77/14	EL	62/72	32
Central Texas	Mar-95	D	0.58	7,408	48/17/12	ELL	66/48/0	31, 38, 40, 60
Connecticut	Mar-95	D	0.37	7,330	60/21	EL	50/32	32
Maryland	Mar-95	D	0.27	7,154	57/17/25	ELL	22/26/67	15, 37, 44
Northern Indiana	Mar-95	E	0.78	2,418	5/17	LL	35/75	54
Puget Sound	Mar-95	D	0.27	8,967	66/32	EL	36/74	38
South Texas	Mar-95	D	0.27	13,014	81/8	EL	38/50	64
Western New York	Mar-95	D	0.12	8,469	61/16	EL	34/39	41
Black Hills	May-96	E	0.85	2,848	9/12	LL	82/76	80
New Jersey	May-96	D	0.39	9,626	64/27	EL	27/75	22
Pittsburgh	May-96	D	0.44	7,776	53/29	EL	33/59	5
Chicago	Jun-96	E	0.82	8,177	59/55	EE	25/23	5
Central Alabama	Sep-96	E	0.61	5,826	19/12	LL	60/0	38
North Texas	Nov-96	D	0.15	11,791	82/14	EL	30/80	103
Central Iowa	Dec-96	D	0.58	4,041	25/16	LL	30/94	86
Greater Nebraska	Apr-97	D	0.45	3,095	25/11	LL	33/65	102
Hudson Valley	Apr-97	E	0.62	3,603	28/17	LL	71/48	32
Eastern Kansas	Jul-97	E	0.78	5,178	23/21	LL	45/76	84
N. Florida/S. Georgia	Oct-97	D	0.63	9,604	67/14	EL	45/42	48
Montana	Mar-98	D	0.28	3,527	24/.01	LL	19/38	381
Boston	Apr-98	E	0.82	9,501	77/53	EE	26/45	7
Greater Los Angeles	Apr-98	D	NA	NA	95/57	EE	NA	15, 96, 115
New York Harbor	Jan-99	E	0.84	9,327	73/68	EE	18/28	12
Notes:								
System Dominance	Classification based on similarity of integrating facilities in terms of size, complexity and academic affiliation before integration: D = dominant-partner system in which one facility is substantially larger, more complex and usually more academically							

	affiliated than the other; E = equal partner systems in which the facilities are roughly similar on these dimension				
Complexity Score:	Management Science Group standardized score				
Extent of Academic Affiliation:	L = limited; I = intermediate; E = extensive, based on size of residency programs				
Pre-integration Specialization:	Non-acute beds are nursing home, long-term psychiatric or domiciliary beds				
Source: National Veterans Health Administration Database					

3. Integration Objectives

A Guidebook for VHA Medical Facility Integration, issued by the Veterans Health Administration, states that VHA integrations should "pool resources to better meet the healthcare needs of the populations that were formerly served by the separate facilities. The resources previously used to support duplicative administrative infrastructure or redundant clinical services are redirected to enhance quality, access or other clinical needs. In doing so, beneficiaries' healthcare needs should be better served."

Consistent with this guideline, VA integrating systems have multiple and similar objectives. Based on our analysis of integration objectives in the first phase of our study, we identified four objectives commonly associated with facility integration in VA, and asked the directors of the integrating systems to rate the importance of each as a key objective in their integration. The ratings were done on a five-point scale from strongly disagree (1) to strongly agree (5).

As shown in Exhibit 3.1, 15 out of 21 directors agreed or strongly agreed that all four objectives were key objectives to their integration. Each of the other 6 directors rated one of the four objectives as a lower priority. The objectives of the more recent integrating systems are consistent with the multiple objectives of the older group.

Within the small range of variation between agree and strongly agree, directors gave slight priority to improving quality and access over increasing efficiency and redirecting resources. The directors were:

- More likely to strongly agree that providing a single standard of care across the system (12 directors strongly agree) and improving veterans' access to services (10 strongly agree) were key priorities, and
- More likely to simply agree (rather than strongly agree) that achieving cost savings (15 directors agree) or redirecting resources to new or expanded clinical services (15 agree) were key priorities.

Given the small variation in responses, it is perhaps not surprising that differences in the rating of objectives among systems are not related to differences in structure or effects of integration.

Exhibit 3.1 Integration Objectives

			Redirect	
	One Standard	**Cost**	**Resources**	**Veterans' Access**
System	**of Care**	**Savings**	**to Clinical Care**	**to Services**
Palo Alto	5	4	5	5
Central Texas	3	4	4	4
Connecticut	5	5	3	5
Maryland	4	4	4	4
Northern Indiana	5	4	4	5
South Texas	4	4	4	4
Western New York	5	5	5	5
Black Hills	4	4	4	4
New Jersey	5	4	4	5
Pittsburgh	5	4	4	5
Chicago	4	5	4	2
Central Alabama	4	4	4	4
North Texas	5	3	4	4
Central Iowa	5	4	5	4
Hudson Valley	4	4	4	4
Eastern Kansas	2	4	4	5
N. Florida/S. Georgia	5	4	5	5
Montana	5	4	4	5
Boston	4	5	4	3
Greater Los Angeles	5	5	5	5
New York Harbor	5	4	4	4
Average	4.43	4.19	4.19	4.33
Notes:	Scale from 1 = strongly disagree to 5 = strongly agree that each statement is a key objective of their facility integration.			
Source: 1998-1999 Directors Integration Survey				

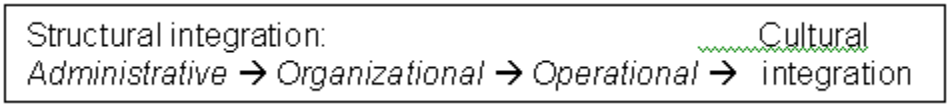
4. Progress of Integration: Where Systems Stand

The integration of two or more medical centers into an integrated health care system can take a number of forms. In order to report the progress of integration in roughly comparable terms across systems, we defined milestones on four dimensions in our earlier study, as shown in Exhibit 4.1. These milestones included:

- **Administrative integration:** A new system director is appointed, data systems are merged, a new name and station number are approved.

- **Organizational integration:** An organization chart for the new system is approved, new leadership and service chiefs are appointed, and staff have been assigned under the new system structure.
- **Operational integration:** Medical by-laws are consolidated, and formal policies and clinical protocols are the same across campuses – or differ according to the services offered at each campus within a common policy framework.
- **Cultural integration:** Staff consistently identify themselves with the newly integrated system rather than with their individual campuses.

Exhibit 4.1 Integration Milestones



In this year's study, we looked at these milestones again. In this section we focus on administrative, organizational and operational integration, which are aspects of **structural integration.** We turn to cultural integration in section 6.

We expected to see a developmental pattern in system integration with systems progressing through these milestones in roughly the order illustrated in Exhibit 4.1. We expected administrative integration to occur first because its components are the basic elements of facility integration in VA. Organizational integration, at least the approval of a new organizational chart and the appointment of system leadership, would generally take place before operational integration. Operational integration would occur later in the process as the consolidation of policies begins the difficult task of aligning the front-line patient care, administrative and support services across the system. (We expected cultural integration to occur last because it cannot be dictated by management and therefore is the most difficult to accomplish.)

In documenting the progress of integration across these milestones, we tracked the progress of **clinical** and **administrative** services separately. While clinical integration is thought to be key to achieving the patient-care goals of creating a single standard of care and increasing access to care, many private-sector multi-hospital systems integrate administrative functions well before clinical functions, or stop with administrative functions. In our earlier study, we found that most VA systems integrate both clinical and administrative services. We wanted to determine whether that pattern continues in the more recent systems.

Exhibit 4.2 summarizes the progress of the VHA integrated systems in reaching structural integration milestones as reported by the system directors in April 1999. Directors were asked to classify a list of activities frequently associated with integration as to whether each was completed (3), in progress (2), planned (but not initiated) (1) or not applicable to their integration (4). The systems are ordered by the date on which its integration was approved. Shading indicates the components the directors reported as completed.

As Exhibit 4.2 shows:

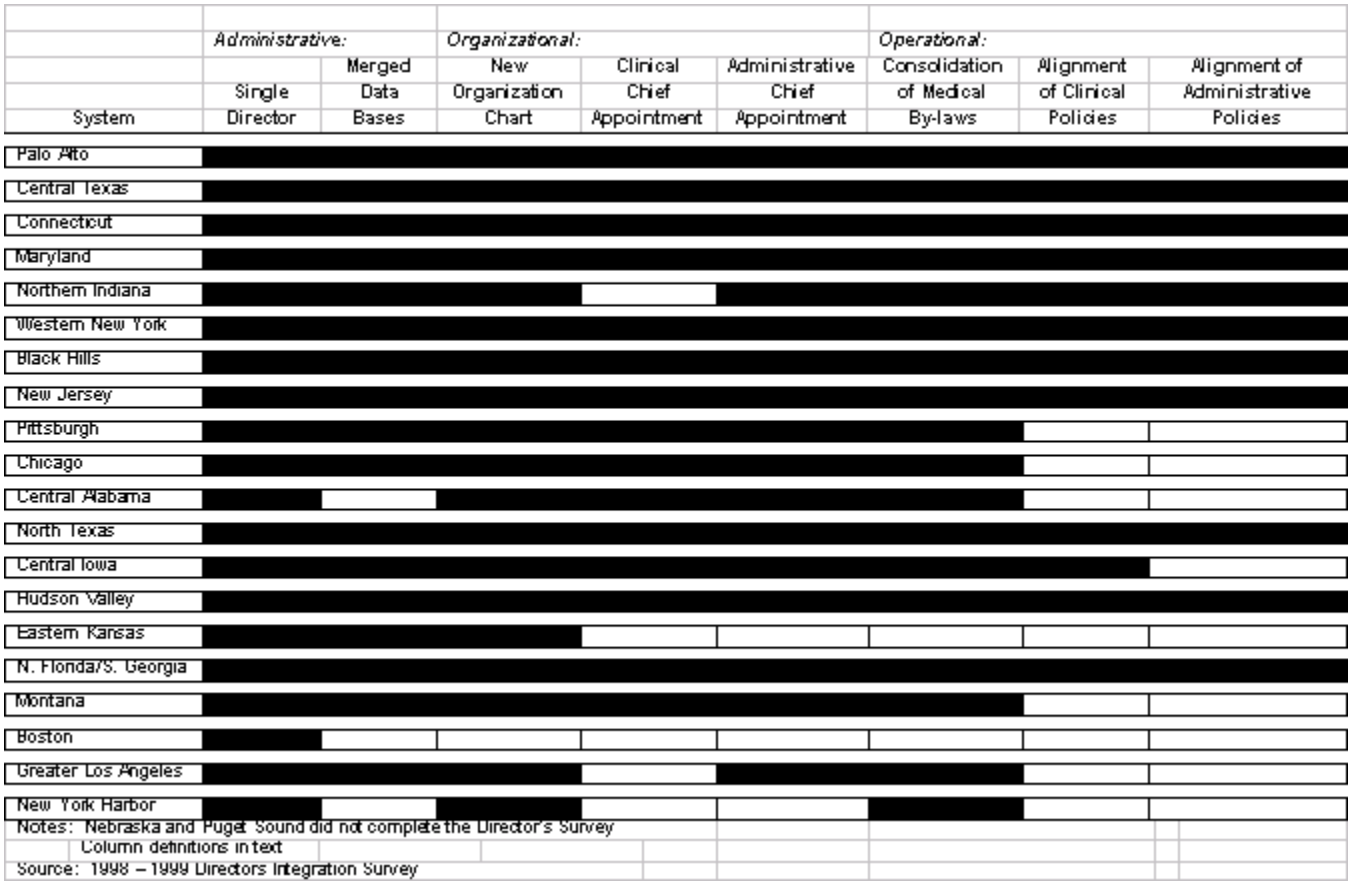
- **As expected, older systems are likely to have made more progress in their structural integration than recent systems,** though the pattern is not uniform. Ten of the 12 older systems (for which we have directors' surveys) completed administrative and organizational integration in terms of merging their data systems, approving a new organizational chart, appointing permanent service chiefs. Nine of the 12 older systems also completed their operational integration.

  Progress against the milestones is more variable in the recent systems. Of the 9 recent systems for which we have directors' surveys, only 3 report they have completed their administrative, organizational and operational integration.
  Thus, age is important to the progress of integration, but with some older systems not having moved through operational integration while some recent systems have, it is not the only factor.

- **As expected, there is a rough progression from administrative through operational integration.** As illustrated in Exhibit 4.2, most systems appeared to complete their administrative integration first, then moved to organizational integration, then moved to operational integration.

- **Integration of administrative services does not precede clinical services.** Shortell, Gillies and associates in their study of private-sector integrated systems propose that functional integration – or in our terms, the integration of administrative services – precedes clinical integration. In VA, it appears that administrative and clinical services were integrated in most systems at the same time.

Exhibit 4.2 Progress Toward Integration



5. Structural Integration: What Systems Look Like

In contrast with our aim in the previous section of looking at common milestones across integrating systems, our intent here is to examine some of the differences in the structures of the systems. We look at how the systems are organized within and across campuses on two dimensions that were important in the last study, and at how the systems are operationally integrated across campuses. These structural dimensions are important both as examples of different approaches to organizing and operationalizing the integration of medical centers, and as variables that help explain differences in integration impact and system performance. The section has four subsections:

- Organizational integration: system headquarters;
- Organizational integration: service-level structures;
- Operational integration: alignment of policies;
- Patterns of structural integration.

In the first three subsections, we present overall results based on the directors' and managers' surveys. (The surveys are described in Appendix A.) In the fourth section we look at patterns among variables and in relation to system characteristics.

5.1 Organizational integration: system headquarters

One of the organizational decisions that a newly formed system makes is where to physically base its leadership and service chiefs and/or service line managers. Top managers can be spread across campuses, which brings the advantage of having senior management presence to provide on-site leadership in all locations. Alternatively, they can be located together to create a central headquarters campus for the system, which promises the advantage of facilitating working relationships among top management.

Beyond its impact on communication, the physical location of top management also reflects the relationship among campuses, and potentially the progress of integration. Creating a central headquarters underscores the dominance of one campus. Having top managers divided across campuses, on the other hand, either signals an organizational decision to create a system without a headquarters – which may reflect a strategic decision to create a system with campuses as equal partners – or signals a lack of progress to system integration – it may simply indicate that service chiefs remain in their old assignments and locations.

Drawing on responses to the directors' survey, as shown in Exhibit 5.1, we found that 9 systems have top management nearly evenly **divided** across campuses, 8 systems have **central headquarters** with 50-95% of top management at one campus, and 6 systems have **exclusive headquarters** with more than 95% of top management based at one campus.

Exhibit 5.1 Structural Integration

				Percent of	Percent of	Percent	Percent of
	Integration	System	System	Services	Services	Services	Policies
System	Group	Dominance	Headquarters	Combined	Consolidated	Separate	Aligned
Palo Alto	Older	Dominant	Central	60%	27%	13%	85%
Central	Older	Dominant	Central	74%	21%	5%	100%
Connecticut	Older	Dominant	Exclusive	67%	22%	11%	100%
Maryland	Older	Dominant	Central	75%	8%	17%	64%
Northern	Older	Equal	Central	57%	29%	14%	71%
Puget Sound	Older	Dominant	Central	67%	17%	17%	92%
South Texas	Older	Dominant	Exclusive	58%	11%	32%	100%
Western New	Older	Dominant	Exclusive	52%	33%	14%	95%
Black Hills	Older	Equal	Divided	73%	7%	20%	69%
New Jersey	Older	Dominant	Central	53%	21%	27%	88%
Pittsburgh	Older	Dominant	Divided	73%	0%	25%	56%
Chicago	Older	Equal	Divided	43%	14%	43%	42%
Central	Older	Equal	Divided	44%	19%	37%	69%

Alabama							
North Texas	Recent	Dominant	Exclusive	53%	37%	10%	83%
Central Iowa	Recent	Dominant	Divided	67%	27%	7%	79%
Greater Nebraska	Recent	Dominant	Central	36%	21%	42%	85%
Hudson Valley	Recent	Equal	Central	40%	27%	33%	100%
Eastern Kansas	Recent	Equal	Divided	10%	30%	60%	60%
N. Florida/S. Georgia	Recent	Dominant	Exclusive	4%	12%	84%	37%
Montana	Recent	Dominant	Exclusive	NA	NA	NA	NA
Boston	Recent	Equal	Divided	NA	NA	NA	NA
Greater Los Angeles	Recent	Dominant	Divided	NA	NA	NA	NA
New York Harbor	Recent	Equal	Divided	NA	NA	NA	NA
Average				53%	20%	27%	78%
Notes:	Montana, Boston, Greater Los Angeles and New York Harbor do not have data from the Manager's Survey.						
Source: 1998-1999 Directors' Integration Survey; 1998 Managers' Integration Survey							

Integrating systems with exclusive or central headquarters are more likely to have progressed further to structural integration. Looking back at the results from the directors' survey in Exhibit 4.2, 10 of 12 systems with exclusive or central headquarters have completed all milestones through operational integration. Systems with divided headquarters are much more variable in their progress: only 1 of 9 systems has completed all milestones through operational integration.

The pattern is particularly clear with the alignment of policies across campuses: 11 of 12 exclusive and strong headquarter systems have aligned both clinical and administrative policies across campuses; only 1 of 9 systems with divided headquarters has finished aligning administrative policies and only two have finished aligning clinical policies.

5.2 Organizational integration: service-level structures

Within the broad framework of the system-level structure, the structures of the individual services in an integrated system are also important. Because they control front-line staff and services, the service structures are the elements through which integrating systems will implement a single standard of care, will realize operating efficiencies, and in some cases will coordinate patient care across campuses.

For this analysis, service-level structures include the staff's reporting relationships to the service chief and the location of services. Services in integrating systems can be structured in one of three ways:

- The service is **consolidated** to one campus;

- The service is **combined** under a single leadership for the system but with staff remaining at more than one campus; or
- The service remains **separate** with separate staff and leadership at different campuses, relatively unchanged from what it was before integration.

We consider both consolidated and combined departments to be structurally integrated. We expect a well-integrated system generally to include a mix of consolidated and combined services to reflect differing opportunities for the efficiencies of consolidation and the continued access of combined services.

Separate departments are not considered to be structurally integrated, although they could be coordinating operations across campuses. We found in our earlier analysis that systems with a higher proportion of integrated services are more likely to report a positive impact from integration than systems in which many services remained separate at each campus.

Drawing from the managers' surveys and looking across systems:

- half of the services are combined (53%),
- one-fifth are consolidated (20%) and
- the rest remain structurally separate (27%).

Also, as shown in Exhibit 5.1, the proportions of services in each category vary considerably from system to system. For example, North Texas and Western New York have the highest proportions of consolidated services with roughly one-third of the managers reporting that their services are consolidated to one campus, suggesting that their campuses are quite highly specialized. North Florida/South Georgia has the highest proportion (84%) proportion of services remaining separate. This is understandable given that we surveyed managers in the summer and fall of 1998, shortly after the system director was appointed and before service-level integration really began. (By April 1999, the director reported considerable progress toward organizational and operational integration, so that the survey results might have been different if the survey were administered later.)

5.3 Operational integration: aligning policies

While organizational integration is an important building block, it does not guarantee integration of the way work is actually done across the system. To reach the objectives of creating a single standard of care and achieving efficiencies, the system needs to align front-line patient care, administrative and support services across campuses, beginning with common medical by-laws and common sets of policies, procedures and clinical protocols. Building on in our earlier report, we use policy alignment as an operational measure of the extent to which integrated systems are working to coordinate efforts across campuses. We assume that systems with higher proportions of services with common policies are integrated to a greater extent than systems with lower proportions.

Drawing from the survey of managers, as shown in Exhibit 5.1:

- Over three-quarters (78%) of the managers across integrated systems reported that their departmental policies were the same across campuses or the department had been consolidated to one campus and therefore had only one set of policies.
- Less than one-quarter of the respondents reported that their departmental policies were not the same across

In 10 of the19 systems for which we have data, more than 80% of the managers report that their policies were integrated.

5.4 Patterns of structural integration

In looking at the structural features of integrated systems, we were interested in whether system characteristics affected structure and how the structural features interacted. We consider a system to be extensively integrated if it has a low proportion of services remaining separate and a high proportion of policies aligned across campuses. Based on our earlier work, we expected dominant-partner systems to be more extensively integrated than equal-partner systems, and, to a lesser extent, older systems to be more extensively integrated than recent systems. We also expected systems with central or exclusive headquarters to act like dominant-partner systems and therefore be more extensively integrated than systems with divided headquarters. Finally, we expected operational integration – the alignment of policies across campuses – to be highest in systems where most services are organizationally integrated. To examine these relationships, we grouped integrating systems by pre-integration dominance, age and structural characteristics, and conducted analyses of variance to compare the groups for systematic differences in their extent of structural integration. From those analyses we found, as shown in Exhibit 5.2, that:

- **Older systems are not consistently more integrated than recently-integrated systems.** Older systems are significantly more likely to have integrated more services. However, older systems do not have more policies aligned and are somewhat *less* likely to have either an exclusive or divided headquarters than recent systems.
    - Older systems on average had significantly fewer services remaining separate: 22% versus 44% in recent systems. At the same time, there were exceptions to the pattern: for example, two late integrating systems, North Texas and Central Iowa, had low proportions of separate departments (10% and 7%) suggesting that they have moved through their organizational integration process quickly.
    - Managers in older systems were not significantly more likely than managers in recent systems to report that their policies were aligned across campuses: on average 81% of services in older systems versus 73% of services in recent system had the same policies across campuses.
    - Older systems were more likely than recent systems to have central headquarters. Using a three-point scale where 1 is an exclusive headquarters and 3 is a divided headquarters, older systems on average had a somewhat higher score (1.96 versus 1.80). Breaking this average down, older systems were more likely than recent systems to have a central headquarters with 50-95% of managers based in one location (46% versus 20%). Recent systems are more likely either to have divided headquarters (50% of recent systems versus 31% older systems) or exclusive headquarters (30% versus 23%).

- **Dominant-partner systems are significantly more likely than equal-partner systems to be extensively integrated.** As expected, dominant-partner systems on average are more likely to have a central/exclusive headquarters, to have fewer services remaining separate and to have more services with policies aligned across campuses.
    - Dominant-partner systems on average had a significantly lower headquarters score (1.58) than equal-partner systems (2.74) indicating that they were more likely to have the majority of top management physically located together. Perhaps not surprisingly, all 7 exclusive headquarters and 3 of 5 central headquarters systems were dominant-partner systems entering the integration.
    - Dominant-partner systems were significantly less likely than equal-partner systems to have services remaining separate (27% versus 36%). The most notable exception to this pattern was North Florida/South Georgia, a dominant system with a high proportion of services separate. But North Florida/South Georgia had barely begun its structural integration at the time of the survey. If it is removed from the analyses, the difference between dominant-partner and equal-partner systems widens (19% versus 36%).

Exhibit 5.2 Patterns of Structural Integration

Exhibit 5.2 Patterns of Structural Integration

System Characteristics:	N	System Headquarters		N	Proportion Services Separate		N	Proportion Policies Same	
Dominance									
Dominant-partner	230	1.58	***	230	27%	***	199	83%	***
Equal-partner	89	2.74		89	36%		75	67%	
Age of integration									
Older	211	1.96	*	211	22%	***	193	81%	NS
Recent	108	1.80		108	44%		81	73%	
System Headquarters [1]									
Exclusive				93	16%	***	86	93%	***
Central				101	22%		90	88%	
Divided				94	32%		79	62%	
Services separate									
< 15 %							129	90%	***
15 – 50 %							121	76%	
> 50 %							24	42%	

Notes: Asterisks indicate significant differences among groups.
*** = p < .01
** = p < .05
* = p < .10

[1] North Florida/South Georgia was excluded from this analysis because integration of services had not begun when data were collected.

- On average, policies were the same across campuses in 83% of the services in dominant-partner systems compared with 67% in equal-partner systems. Of the 14 dominant-partner systems for which we have survey data, 9 had policies aligned in more than 80% of their services.

- **Systems with exclusive or central headquarters are more likely than systems with divided headquarters to be extensively integrated.** Overlapping with dominance, but not identical with it, the physical location of top management is significantly related to proportions of services integrated and policies aligned across campuses.
  - On average, separate services in exclusive and central headquarters systems, again excluding North Florida/ South Georgia, have 16% and 22% respectively of services remaining separate versus 32% in systems with divided headquarters.
  - More than four out of five services in systems with central (93%) or exclusive (88%) headquarters had policies aligned in contrast with under two-thirds (62%) in systems with divided headquarters. None of the 6 systems with divided headquarters has more than 80% of the managers similarly reporting (though Central Iowa comes very close at 79%).

- **Systems are most likely to be operationally integrated when they are dominant-partner systems, have a central/exclusive headquarters and have a substantial majority of their services integrated.**
  - In dominant-partner systems, 83% of the services, on average, had the same policies across campuses compared with 67% in equal-partner systems.
  - In systems with exclusive and central headquarters, 93% and 88% of the services respectively had policies aligned across campuses compared with 62% in divided-headquarters systems.
  - On average, 90% of the services in systems with fewer than 15% of the services remaining separate had aligned their policies compared with only 42% on the services in systems with more than 50% of the services remaining separate.

Clearly, integrated structures do not simply emerge with the passage of time. These patterns are

integration, that the passage of time is important to development of an integrated system but is far from the only factor operating. The integration of individual services appears to occur gradually in most systems. However, as we discuss below, the alignment of policies – which we consider the next step in moving organizational integration down to the front-line operations – and the location of system headquarters are more closely related to factors other than age of integration.

Consistent with our expectations, systems with a dominant facility coming into the integration are more likely to create a system that is structurally integrated down through individual service organization and to the front-line staff operations, rather than just linking facilities administratively at the top and having them continue to operate independently.

Also consistent with our expectations, systems with exclusive and central headquarters make more progress toward organizational and operational integration. It may be that an exclusive or central headquarters is important primarily because of physical location: with the system leadership and service chiefs together, they can interact and communicate more directly and efficiently than if they are spread across campuses and must rely on e-mail, videoconferences or traveling. The location of managers in an exclusive or central headquarters may also reflect a decisiveness about moving ahead to integrate the system beyond its administration. Consistent with this interpretation, the strong relation between system headquarters and pre-integration dominance suggests a translation of pre-integration dominance into post-integration dominance: one location is clearly in the lead, the leaders there make decisions and move ahead. In at least some of the systems with leadership spread across campuses, the divided arrangement may not reflect a managerial philosophy of equal partnership so much as a signal that decisions have not been made about fully integrating the campuses. The relationship between divided headquarters and less integration of services and policies supports this interpretation.

We consider shared policies and procedures to be the most extensive level of structural integration because they represent the closest link to front-line patient care, administrative and support services. As expected, common policies are most likely to be found in systems with a dominant partner before integration and in systems that are organizationally integrated – that have a central/exclusive headquarters and/or a low portion of individual services that are not combined or consolidated. Common policies are not more likely to be found in older than more recent systems. Further analyses through logistic regression show that among these variables, the best predictor of common policies is a low proportion of individual services remaining separate to operate in parallel at multiple campuses. This is consistent with our findings about the progress of integration based on the directors' survey, where the organizational integration of individual services generally precedes operational integration reflected in common policies and procedures across campuses.

6. Cultural Integration: Identification with the System

The culture of an organization refers to the shared norms, values, beliefs and assumptions that guide an organization and provide the frame of reference in which employees think of the organization. We are interested in cultural integration as a signal that the staff in previously separate hospitals are really working together as part of a larger system. As such, it is both a measure of the extent of integration and an intermediate measure of the impact of integration.

system integration – and one that all systems reported was still in progress. On our site visits people talked extensively about cultural differences. In many cases staff could characterize those well, generally along the lines of having one small facility with a stable workforce that considered itself family and were used to doing things informally, and one large facility, usually urban, usually with a strong affiliation that was complex, where staff turnover was high and operations more bureaucratic. Staff at both campuses would articulate these profiles consistently, both in relation to themselves and the other campus. And they could articulate the mistrust or jarring resulting from these differences. In other cases, though, the differences in culture could not be articulated, and in fact, we judged the facility cultures to be similar. But staff at each campus still mistrusted each other and found it difficult to work together. What appeared to be the more important barrier to creating an integrated system, then, was not that the organizational cultures were different, but that staff in each campus identified strongly with their campus and their local colleagues and distrusted the others. What is really important is that people work together and begin to put system above individual campus. Thus, we concluded that the important dimension of cultural integration is not the extent to which the cultures are the same, but the extent to which staff trust each other and work together productively across campuses – and begin to think of themselves as employees of the larger integrated health care system rather than just their former facility. Therefore, we felt that system identification serves as a good proxy for cultural integration.

To tap cultural integration, therefore, we asked managers to report the proportion of their staff who identified with the system versus their campus. They responded on a five point scale with 5 being high system identification (All of my staff think of themselves as employees of the health care system….) and 1 being low system identification (All of my staff think of themselves primarily as employees of their respective campuses….). We averaged the responses for each system to create a system identification score.

Across all systems the average score was 2.70, close to the midpoint of the range where half the staff identify primarily with the system and half with the campus. As shown in Exhibit 6.1, the scores for individual systems range from 1.80 to 3.75, with Puget Sound and Palo Alto reporting the highest staff identification with the system.

Managers, as shown in Exhibit 6.2, are significantly more likely to report high system identification in:

- **Dominant-partner systems.** On average, dominant-partner systems had an average score of 3.13 while equal-partner systems scored 2.77. Among equal-partner systems, 5 of 6 systems scored below 3.0 and among dominant-partner systems, 10 systems scored at or above 3.0 and 3 scored below 3.0.

Exhibit 6.1 System Identification

	Integration	**System**	**System**	**Separate**	**Policies**	**System**
System	**Group**	**Dominance**	**Headquarters**	**Services**	**Aligned**	**Identification**
Palo Alto	Older	Dominant	Central	13%	85%	3.73

Palo Alto	Older	Dominant	Central	13%	85%	3.73
Central Texas	Older	Dominant	Central	5%	100%	3.40
Connecticut	Older	Dominant	Exclusive	11%	100%	3.00
Maryland	Older	Dominant	Central	17%	64%	3.08
Northern Indiana	Older	Equal	Central	14%	71%	2.86
Puget Sound	Older	Dominant	Central	17%	92%	3.75
South Texas	Older	Dominant	Exclusive	32%	100%	3.42
Western New York	Older	Dominant	Exclusive	14%	95%	3.24
Black Hills	Older	Equal	Divided	20%	69%	2.75
New Jersey	Older	Dominant	Central	26%	88%	3.00
Pittsburgh	Older	Dominant	Divided	25%	56%	3.27
Chicago	Older	Equal	Divided	43%	42%	2.71
Central Alabama	Older	Equal	Divided	37%	69%	3.44
North Texas	Recent	Dominant	Exclusive	11%	83%	3.63
Central Iowa	Recent	Dominant	Divided	7%	79%	2.56
Greater Nebraska	Recent	Dominant	Central	43%	85%	2.33
Hudson Valley	Recent	Equal	Central	33%	100%	2.80
Eastern Kansas	Recent	Equal	Divided	60%	60%	1.80
N. Florida/S. Georgia	Recent	Dominant	Exclusive	84%	37%	2.52
Average:				27%	78%	2.70

Notes: Montana, Boston, Greater Los Angeles, and New York Harbor are not included in these analyses.

Sources: 1998 Managers' Integration Survey; 1998-1999 Directors' Integration Survey

- **Older integration systems.** Managers in older systems on average rated system identification higher (3.20) than managers in recent systems score (2.68). In 10 of the 13 older systems, managers on average judged that half or more of the staff think of themselves primarily as employees of the health care system rather than their respective campuses. In contrast, managers in only 1 of the 6 recent systems on average thought that more than half of their staff identify with the system (North Texas).

  But passage of time does not guarantee identification with the system. In five of the older integrating systems, managers judged that half or more of the staff identified primarily with their own campus. At the time of the survey administration, roughly two to three and a half years had elapsed since these 5 systems were approved for integration.

- **Systems with exclusive or central headquarters.** Exclusive-headquarter systems (excluding North Florida/South Georgia) scored 3.39 and central headquarters systems scored 3.04, while divided-headquarters

systems with exclusive and central headquarters 7 systems scored at or above 3.0 and 4 systems scored below 3.0.

- **Systems with few services remaining separate.** Managers in systems with less than 15% of their services remaining separate scored 3.24 while systems with more than 50% of the services remaining separate scored 2.30. Both of the systems with more than 50% of the services remaining separate had system identification scores below 3.0, while 5 of 7 systems with 15% or fewer services remaining separate have system identification scores at or above 3.0.

Surprisingly, systems with policies aligned across campuses in more than 80% of their services do not on average have higher system identification than systems with fewer than 80% aligned. As suggested by the regression analyses below where we use the policy alignment of individual managers, the division into two groups appears to be too gross a distinction to show a relationship.

To look more systematically at the factors that affect system identification – and to take into account the relationship and relative importance of the variables that each by itself seems to be related to system integration -- we conducted standard regression analyses. The model that explains the most variation, as shown in Exhibit 6.3, indicates that managers in integrated systems are more likely to report high system identification among their staff when:

- The system is older -- it was approved for integration in 1996 or earlier;
- The system has a central or exclusive headquarters where most or all top management and service chiefs are located at one campus;
- The policies in the manager's service are the same across campuses.

Clearly, system identification is higher where the integrated system is more mature, both in terms of age and extent of integration, as indicated by standardizing policies. This is not surprising: if two or more medical centers are joined administratively but continue to operate essentially independently with little change in staff work, there is no reason for staff to change their allegiance to identify with the larger system. Conversely, if the organization and operations build bridges across campuses, creation of the integrated system brings changes that affect staff members' daily work and they are therefore more likely to identify with the system.

Exhibit 6.2 Cultural Integration: System Identification by Structural Variables

System Characteristics:	N	Mean
Dominance		
Dominant-partner	220	3.13 **
Equal-partner	85	2.77
Age of integration		
Older	207	3.20 ***
Recent	98	2.68
System headquarters†		
Exclusive	92	3.39 ***
Central	100	3.04
Divided	90	2.79
Separate services		
≤ 15 %	136	3.24 ***
15 - 50 %	136	3.03
> 50 %	33	2.30
Policies Aligned		
> 80 %	222	3.05 NS
< 80 %	83	3.00

Notes: Asterisks indicate significant differences among groups.
*** = p < .01
** = p < .05
* = p < .10

† North Florida/South Georgia was excluded from this analysis because integration of services had not begun when data were collected.

Exhibit 6.3 Factors Affecting System Identification

	Regression Analysis
Variable	**Parameter Estimate**
Intercept	1.3521 ***
Clinical service	-0.0826
Policies same	0.5785 ***
Dominant-partner system	-0.2076
Percent separate services in system	0.0060
Integration approved (Jan 95-Mar 95)	0.8645 ***
Integration approved (May 96-Jun 96)	0.9467 ***
Integration approved (Sep 96-Dec 96)	1.1579 ***
Exclusive headquarters	0.8146 ***
Central headquarters	0.6173 **
R^2	0.1338
N	231

Notes: *** = p < .01
** = p < .05
* = p < .1

The relation between central or exclusive headquarters and system identification is at first glance more surprising. Systems with central/exclusive headquarters are often dominant-partner systems with substantial differences in size and complexity. Those differences are usually associated with very different organizational cultures, and one might expect the cultural differences to pose barriers to system identification. One might also expect that having most or

headquarters campuses. They would feel that their facility had been taken over and diminished, and this would lead to a stronger loyalty and solidarity with their own campus. One explanation for the apparently contradictory findings is methodological. By surveying managers, we may get a biased perspective where most managers are based at one campus: if those managers do not interact frequently with staff at the other campus, they may understate staff negative feelings and overestimate their system identification. The pattern is so strong here and in later analyses, however, that it seems unlikely that manager bias would so consistent to account for the full effect. An alternative explanation is that, in fact, a different dynamic holds than the one we expected, at least in some systems. It appears that systems with central or exclusive headquarters also tend to move fairly decisively to integrate the system. From our earlier interviews with staff in integrating systems, we know that they are most anxious about uncertainty. By moving decisively, central and exclusive headquarters systems reduce anxiety. Divided headquarters may reflect a lack of decisiveness, or less cohesiveness — and therefore less system identification.

The type of service that the manager leads – clinical or administrative – is not a significant factor in perceptions of integration. Contrary to expectation, pre-integration dominance and proportion of services integrated are not significant predictors of system identification either. Pre-integration dominance is highly correlated with the location of top management, and with top management being the stronger variable in the equation, it replaces dominance in explaining the variation in system identification. It appears that while pre-integration dominance strongly influences the location of top management, it is the location of top management – how dominance actually plays out in the integrated system – that is more important to system identification. Similarly, having the same policies across campuses is highly correlated with the service being structurally integrated. But conceptually, the operational integration associated with aligning policies brings the system closer to integration and therefore is more highly associated with system identification.

7. Perceived Impact of Integration

Ultimately, we are interested in the impact of system integration. Integrating medical centers involves major organizational change that in the short run disrupts the organization, requires substantial emotional and practical resources and competes for attention with the primary medical center missions of patient care, research and education. To justify incurring these costs, systems must expect that integration will have benefits, that it will help them reach their objectives of improving patient care and access and improving system efficiency. In this study we used two approaches to measure impact. One was to ask system directors and managers to report their perceptions of impact, as reported in this section. A second approach was to use objective measures of system operation, as reported in the next section.

In this section, we report perceived impact on two dimensions:

- impact on resources and services, and
- impact on staff morale.

7.1 Impact on resources and services

impact on many aspects of a system's operations. Focusing on four aspects that cover different clinical and administrative areas that are likely to be affected by integration, we asked managers to rate impact on a five-point scale from very/mostly negative (1) to very/mostly positive (5) in terms of:

- adequacy of resources provided to their service;
- quality of services provided by their service;
- patients' access to care for services from their service;
- their ability to obtain services or support from other services.

The average manager ratings for each system on each aspect of impact are shown in Exhibit 7.1. Across all integrating systems:

- Managers rated the highest impact on patients' access to care (3.64) and quality of services provided (3.51). Both were somewhat positive.
- The lowest impact was on adequacy of resources provided to their service (3.01). In 10 systems, the average rating was below 3.0 – signaling that managers judged that integration had a negative impact on the adequacy of resources to their services.

- In one system, average ratings on all four dimensions were above 3.8. In contrast, average ratings in two systems were below 3.0 on all dimensions.

7.2 Impact on staff morale

Like system identification, perceptions about the impact of integration on staff morale can be viewed as a mediating variable. Staff morale is, from one perspective, a reflection of how well the integration is going. From another perspective, it is a factor that affects performance: staff satisfaction is related to job performance which directly affects the quality of service and care provided – for both clinicians and non-clinical staff. Because facility integration involves major organizational change, we expected staff morale to be low shortly after the integration process begins as the organization is disrupted and staff face high levels of uncertainty. We expected morale to rise as the system reaches new equilibrium and uncertainty is reduced as the system matures and is structurally integrated.

As with the other dimensions of perceived impact of integration, managers rated staff morale on a five-point scale from very/mostly negative (1) to very/mostly positive (5). As shown in Exhibit 7.1, managers consistently rated impact on staff morale lower than impact on resources and services. The system ratings ranged from a low of 1.60 to a high of 3.89 with an overall average rating of 2.57.

7.3 Patterns of perceived impact

In trying to understand the variation among systems in perceived impact, we looked at the age and structure of the integrating system and at the type of service the manager led (clinical or administrative). We expected to see higher impact in older systems as integration settles in. We expected to see the highest perceived impact in systems with the most extensive structural integration: since dominant-partner systems, systems with exclusive and central headquarters, low proportions of services remaining separate and high proportions of services with the same policies across campuses appear to reflect more extensive integration, we expected them to be

of clinical and administrative services, we looked at the type of service to see if managers reported different levels of impact. However, since clinical and administrative services are generally integrated together in VA, we did not expect differences in perceived impact.
To analyze systematically the factors that affect perceived impact – and to take into account the relationship and relative importance of the variables, we conducted regression analyses with these variables. Since the four dimensions of impact on resources and services are highly correlated and all four cluster in a factor analysis, we summed the scores on the four dimensions to create a total resource and service impact score. We analyzed impact on staff morale separately because it was not as highly correlated and is conceptually distinct.
Looking first at factors that predict perceived impact on resources and services, as shown in Exhibit 7.2, the regression model indicates that managers reported the strongest impact of system integration when:

- The system is older -- approved for integration in 1996 or earlier;
- The system has a central or exclusive headquarters where most or all top management and service chiefs are located at one campus;
- The policies in the manager's service are the same across campuses.

The regression model for staff morale, also shown in Exhibit 7.3, is similar. The impact of integration on staff morale is judged more positive when:

- The system is "middle-aged" (approved between May and December 1996);
- The system has a central or exclusive headquarters;
- The policies in the manager's service are the same across campuses.

Exhibit 7.1 Perceived Impact of Integration

	Perceived Impact on:				
	Adequacy of	**Quality of services**	**Patients' access to care**	**Ability to obtain services or support**	**Morale of staff in service**
Palo Alto	3.07	3.64	3.53	3.15	2.93
Central Texas	3.50	3.80	4.29	3.40	2.50
Connecticut	3.11	3.47	4.00	3.06	2.33
Maryland	2.92	3.50	3.59	3.00	2.50
Northern Indiana	2.86	4.00	3.29	3.57	2.29
Puget Sound	2.92	3.92	4.26	3.17	3.08
South Texas	3.42	3.79	3.85	3.58	3.39
Western New York	2.95	3.38	3.80	3.09	2.50

Western New York		2.95	3.38	3.80	3.09	2.50
Black Hills		3.25	3.44	3.39	3.07	2.31
New Jersey		2.61	3.50	3.46	3.11	2.26
Pittsburgh		3.00	3.38	3.77	3.09	2.55
Chicago		2.60	3.62	3.73	3.19	2.71
Central Alabama		3.20	3.25	3.25	3.19	2.44
North Texas		3.95	4.28	3.71	3.89	3.89
Central Iowa		2.75	3.20	3.40	2.68	2.00
Greater Nebraska		2.46	2.84	3.68	2.71	2.20
Hudson Valley		2.93	3.64	2.86	3.21	2.71
Eastern Kansas		2.57	2.75	4.13	2.89	1.60
N. Florida/S. Georgia		3.06	3.33	3.08	3.00	2.67
Average		3.01	3.51	3.64	3.16	2.57

Notes: Montana, Boston, Greater Los Angeles and New York Harbor are not included in these analyses
Source: 1998 Managers' Integration Survey

Exhibit 7.2 Factors Affecting Perceived Impact

	Regression Analyses			
Variable	**Resources and Services Parameter Estimate**		**Staff Morale Parameter Estimate**	
Intercept	2.2766	***	1.1652	**
Clinical service	- 0.1033		0.0782	
Policies same	0.4735	***	0.3999	**
Dominant-partner system	- 0.3356	**	- 0.2452	
Percent separate services in system	0.0047		0.0052	
Integration approved (Jan 95-Mar 95)	0.5522	**	0.2746	
Integration approved (May 96-Jun 96)	0.8094	***	0.7151	**
Integration approved (Sep 96-Dec 96)	0.5207	*	0.7581	*
Exclusive headquarters	0.5572	**	1.1786	***
Central headquarters	0.4814	**	0.6757	**
R^2	0.1228		0.1098	
N	231		231	

Notes: *** = p < .01
** = p < .05
* = p < .10

location of top management and alignment of policies across campuses are significant, but percent of services remaining separate and type of service are not.

The creation of a strong system headquarters is likely to be associated with stronger impact because it is associated with quicker and more extensive integration. Conversely, systems with service chiefs spread equally across campuses may reflect less extensive integration; if there are fewer changes resulting from integration, it follows that perceptions of impact on resources and services would be lower, or even negative. Having the same policies across compuses, rather than leaving them independent at each campus, is likely to result in changes in the way work is done and therefore also lead to perceived changes in resources and services. Similarly for impact on staff morale, where the headquarters variables are even stronger, it appears that the decisiveness of creating a single headquarters and the impact on staff work brought by consolidating policies mark systems that have moved ahead with their integrated system to an extent that the initial disruption and anxiety of integration is past or passing, and the negative feelings about integration are lessening.

The percent of services remaining separate and type of services are not related to perceived impact, both on resources and services, and on staff morale. Having a high proportion of services structurally integrated is highly correlated with having the same policies across campuses. But conceptually, the operational integration associated with aligning policies appears to reflect a more advanced level of integration – one that affects daily operations more directly -- and therefore is more highly associated with perceived impact. Since administrative and clinical integration appears to progress roughly simultaneously in most systems, it is not surprising that managers in each group would not have systematically different judgments about the impact of integration.

Age of integration has a weaker relationship here than in predicting system identification, and for staff morale, the age of the oldest system in not significant. It appears that for a while after integration, the passage of time in itself is associated with higher morale, probably as staff get used to the idea of being in an integrated system rather than an independent facility. But time has a weaker effect than structure, and its effect wears out after three years or so.

Surprisingly, pre-integration dominance has a significant – and negative – relationship with perceived impact on resources and services, and no significant relationship with staff morale. We expected a positive relationship since dominance is positively related to structural integration. It appears that where pre-integration dominance is not carried through to high structural integration, where the system does not have a central or exclusive headquarters or policies aligned across campuses, facility integration is more likely to be judged by managers to have a negative impact on their resources and services. Pre-integration dominance does not show a significant relationship with staff morale. Dominance is highly correlated with the location of top management, and with top management variables being the strongest in the equation, they replace dominance in explaining the variation in perceived impact. As we saw with system identification, it appears that while pre-integration dominance strongly influences the location of top management, it is the location of top management – how dominance actually plays out in the integrated system – that is more important to the perceived impact of integration on staff morale.

As described in section 3, VA integrating systems have multiple objectives – objectives that bring them closer to creating integrated delivery systems than to simply merging two medical centers administratively. In this section we look at the impact of integration on four dimensions linked to the broad integration objectives the integrated system directors rated as important:

- **Cost savings/system efficiency:** To meet their objective of cost savings, we expected integrated systems to streamline administrative operations and thus be able to eliminate redundant structures, positions, supplies and equipment. We also expected them to create more coordinated delivery systems across previously independent, often competing, institutions. As the streamlining and coordination make the system more efficient, we expected to see :
    - Lower total costs/unit of workload
    - Lower FTEE/adjusted workload.

- **Redirection of resources from administrative to clinical care:** As systems become more efficient and realize cost savings, we expected them to use those savings to meet a second integration objective of redirecting resources to clinical services to expand and improve patient care. As indicators of redirected resources, we expected to see:
    - Higher clinical (nurses and physicians) FTEE/total FTEE
    - Higher direct (or clinical) costs /total costs
    - Higher direct costs/ indirect costs
    - Higher direct costs/unit workload
    - Lower indirect (or administrative) costs/ unit workload.

- **Veteran access to care:** As systems become more efficient and as resources are directed to expand patient care, we expected access to veterans to improve. At the same time, we recognized that two integration dynamics work in a counter direction. First, in a system where a high proportion of services are consolidated to one campus, patients may feel that their access is diminished if they have to travel farther for services. Second, facility integration represents a significant organizational change, and the dislocation, anxiety and diversion of staff attention to the change process may negatively affect patient care. It is important not only to check for the positive effect of increasing access, but to ensure that the converse is not happening: that patient care is not being compromised. To go beyond the minimum objective of not diminishing access to current patients, if the integration is successful in expanding access, we would expect it to draw in new patients to the system. Thus, if the integration was meeting its objectives, we expected to see:
    - Level or increased patient satisfaction with access
    - Increased number of patients.

- **Single standard of care/quality of care:** As a strategy for improving the quality of care to patients, we expected integrated systems to create a single standard of care across the system – to ensure that wherever patients enter the system, they would be treated under the same policies and clinical protocols, based on best practices. We also expected the system to provide a comprehensive array of services and to coordinate each patient's care across providers and across campuses. One strategy for improving coordination and continuity is to strengthen primary care. If the system is creating a single standard of care, we expected to see:
    - Standard policies across campuses
    - Increased patient satisfaction with continuity and coordination
    - Increased primary care enrollment.

The first test of our expectations, or hypotheses, is to compare the performance of each integrating system before integration with its performance after integration. This comparison answers questions about whether the systems are meeting their objectives. This approach by

as an organizational strategy in VA. In the last four years, there have been many pressures for change in VA in addition to facility integration. Many of the objectives of integration are also broader system objectives – increasing efficiency and increasing primary care enrollment, to take only two examples. The challenge in assessing the effects of facility integration then is to separate the effects of integration from the effects of the larger system changes.

To meet this challenge, we used a multiple time-series analytic design to compare integrating and non-integrating hospitals: we compared the performance of integrated systems before and after integration, and compared their change in performance with the change of non-integrating medical centers during the same period. Using a methodology similar to that used by Young et al., we used each system's date of integration approval and data system merger to define the pre-post test period for that system. This approach allowed us to take into account the differing lengths of time each system had been integrated at the time of our analysis. Using a five-year study period of fiscal year 1994 to fiscal year 1998, we calculated multiple-year averages for each variable for the periods before and after the approval date to increase the stability of the estimates. One difficulty in making pre-post test comparisons is that, by definition, there are two separate facilities before integration and only one after. To resolve this difficulty, we summed the pre-test values of the two integrating systems so that each system had one set of values before as well as after integration.

To create a comparable comparison group, we identified the VA Medical Center Group (MCG) to which each pre-integration facility belonged and used the average or summed value of the group as a proxy comparison hospital. We used the same groups for the post-integration comparisons – even though the newly integrated system might fall in a new MCG – to reflect a comparison to trends that the integrating facilities would have experienced if they had not integrated. Thus the number of comparison observations equaled the number of facilities that integrated: systems with two facilities had two comparisons and systems with three facilities had three comparison observations. We calculated multiple-year pre-post averages for the comparison hospitals using the integration date of the system for which the comparison was selected to define the pre-post test period. In this way, each comparison group reflected the VA-wide trends for comparable hospitals for the relevant period for its integration.

A full description of the methodology used in these analyses can be found in Appendix A.

Using this design, we analyzed all integrating systems with at least one year of post-approval experience (18 systems with 38 comparisons) – that is, those approved for integration before fiscal year 1998 --and two subsets of systems intended to maximize the likelihood of finding the expected effects of facility integration:

- **Older integrated systems**, defined as the systems in our initial study (13 systems with 28 comparisons): As we discussed earlier, it takes time to put into place the administrative, organizational and operational changes that are expected to enable a system to meet its integration objectives. Moreover, the integration of two or more medical centers represents a major organizational change. Such changes are disruptive to the system and often result in a dip in performance and increase in costs as the system grapples with and absorbs the change. By looking only at early integrations, we focus on more mature systems that are more likely to have moved beyond the disruptive phases of change. With the latest system in this group approved for integration in September 1996, all have at least two full years of post-integration experience and data.

- **Operationally integrated systems**, defined as systems in which more than 80% of the managers reported that

set of policies (11 systems with 23 comparisons): While age of integration is important, we also saw in earlier sections of the report that age is not the only determinant of the progress of integration in a system. By looking at systems that have aligned their policies, we focus on those that are operationally integrated and therefore are more likely to have the elements in place to meet their objectives.

These groups are not mutually exclusive.

Measures of performance were drawn from existing VA databases. System efficiency and redirection of resources measures used data from the Allocation Resource Center Standard Reports. Access and single standard or care measures used data from the National Performance Data Feedback Center's annual outpatient survey and the inpatient and outpatient databases of the Patient Treatment Files. Details of the measures and data sources are provided in Exhibit A-3 in Appendix A.

8.1 Results

Our analyses indicate that the integration of VA medical centers has had modest effects. Exhibit 8.1 shows the pre- and post- test means for the most inclusive group of integrated systems (those approved prior to FY 98) and their comparisons. Comparable tables for the operationally-integrated systems and the early integration systems can be found in Appendix B. The asterisks on these tables indicate significant pre-integration differences between integration and comparison systems.

Exhibits 8.2 and 8.3 show three difference scores for each variable for each of the three groups:

- The pre-post difference for the integration group – the extent to which the integrated systems on average changed after integration approval in relation to before;
- The pre-post difference for the comparison group – the extent to which the proxy comparison hospitals on average changed before and after the time of their integrated system's approval;
- The difference of the differences – the extent to which the integrated and comparison groups changed at the same rate and in the same direction; a significant difference indicates that integrated systems behaved differently from similar non-integrating medical centers.

Significant differences are marked with asterisks.

The analyses show that:

- **Integrated systems on average remained level or moved in the expected direction after integration, though not always by significant amounts.** All three integration groups showed similar patterns. For the most inclusive group of systems, Exhibit 8.2 illustrates, in the column labeled Integration: Pre-Post Differences, that the integrated systems on average were more efficient after integration than before it. The cost per unit of adjusted workload dropped slightly by $138 (from $4,7495 to $4,357 as shown in Exhibit 8.1), and FTEE per adjusted workload dropped significantly by 12.17 FTEE (from 69.21 to 57.04). Consistent with increased efficiency – though not necessarily with redirected resources -- both direct and indirect costs per workload fell marginally, by $93 (from $3,141 to $3,048) for direct costs and by $45 (from $1,354 to $1,309) for indirect costs.

  The integrated systems demonstrated improved access to veterans by showing a significant drop in the rate of problems reported on the access scale of the national outpatient Customer Service Survey (CSS) by .09 from .24 before integration to .15 after it. The numbers of unique patients rose but not by significant amounts. In terms of a single standard of care, the rate of problems reported on the CSS coordination scale fell

significantly, on the CSS continuity scale from .27 to .23. The subgroups show similar patterns, as illustrated in Exhibit 8.3, except on the standard of care measures. The operationally-integrated systems showed no significant differences while the early integrated systems showed a significant increase in primary care enrollment, from 72% to 78%, and a significant decline on the outpatient CSS continuity scale, from .29 to .22.

- **Integrated systems showed significantly stronger performance than comparison hospitals on one important variable: decreased staff per workload.** Looking first at the most inclusive integration group, shown in Exhibit 8.2, the FTEE per 1000 units of workload dropped for both integrated systems by 12.17 (from 69 to 57 per 1000 units of workload) and comparison medical centers by 10.20 (from 65 to 55), but the drop was significantly greater for the integrated systems, as shown in the column labeled Difference of Differences. The difference between integration and comparison systems was larger for operationally-integrated systems but smaller and not statistically significant for early integrations as shown in Exhibit 8.3. The differences for the other measure of efficiency, total costs per workload were not statistically significant.

Exhibit 8.1 System Performance
Means for Integrated Systems and Comparisons Groups

	Integrated Systems		*Non-Integration Comparison Groups*	
Variable	Pre-Integration	Post-Integration	Pre-Integration	Post Integration
Cost Savings/System Efficiency				
* Total cost/workload	4,495.00 **	4,357.00	4,142.00	4,093.00
* FTEE/1000 unit workload	69.21	57.04	65.15	54.95
Redirection of Resources to				
* Clinical FTEE/total FTEE	0.38	0.37	0.38	0.37
* Direct costs/total costs	0.70 ***	0.70	0.71	0.71
* Direct costs/indirect costs	2.36 ***	2.41	2.50	2.50
* Direct costs/workload	3,141.00 *	3,048.00	2,955.00	2,920.99
* Indirect costs/workload	1,354.00 **	1,309.00	1,187.00	1,172.18
Access to Care				
* Patient satisfaction (access problems)	0.24	0.15	0.23	0.14
* Number of unique patients	13,642	15,053	16,043	17,866
Single Standard of Care				
* Percent primary care enrollment	73.38 **	76.91	69.06	76.52
* Patient satisfaction (coordination problems)	0.35	0.32	0.35	0.31
* Patient satisfaction (continuity problems)	0.27	0.23	0.30	0.22

Notes: Only integrated systems with at least one year of post integration-approval experience--those systems approved before FY98--are included.
Asterisks indicate significant pre-integration differences between integration and comparison systems.
*** = p < .01
** = p < .05
* = p < .1
See Appendix B, Exhibit B-2 for details.
Sources: National Veterans Health Administration Databases.

Exhibit 8.2 Effects of Facility Integration: Systems Integrated before FY 98

Variable	Integration: Pre-post Differences	Comparison: Pre-post Differences	Difference of Differences
Cost Savings/System Efficiency			
* Total cost/workload	-138.00	-49.00	-89.00
* FTEE/1000 unit workload	-12.17 ***	-10.20 ***	-1.97 *
Redirection of Resources to			
* Clinical FTEE/total FTEE	-0.01	0.00	0.00
* Direct costs/total costs	0.00	0.00	0.00
* Direct costs/indirect costs	0.05	0.00	0.05
* Direct costs/workload	-93.00	-34.01	-58.99
* Indirect costs/workload	-45.00	-14.82	-30.18
Access to Care			
* Patient satisfaction (access problems)	-0.09 ***	-0.09 ***	0.00
* Number of unique patients	1,411	1,823	-412
Single Standard of Care			
* Percent primary care enrollment	3.53	7.46 ***	-3.93 **
* Patient satisfaction (coordination problems)	-0.03 *	-0.04 ***	0.01
* Patient satisfaction (continuity problems)	-0.04	-0.08 ***	0.03 **

Notes: *** = p< .01
** = p< .05
* = p< .10

Exhibit 8.3 Effects of Facility Integration: Older Integrated Systems and Operationally-Integrated Systems

Variable	*Older Integrated Systems Results (Prior to FY 97)*			*Operationally-Integrated Systems Results*		
	Integration: Pre-post Differences	Comparison: Pre-post Differences	Difference of Differences	Integration: Pre-post Differences	Comparison: Pre-post Differences	Difference of Differences
Cost Savings/System Efficiency						
* Total cost/workload	-45.00	-13.00	-32.00	-175.00	-58.00	-117.00
* FTEE/1000 unit workload	-10.81 ***	-9.88 ***	-0.93	-13.00 **	-10.25 **	-2.75 **
Redirection of Resources to						
* Clinical FTEE/total FTEE	0.00	0.00	0.00	0.00	0.00	0.00
* Direct costs/total costs	0.00	0.00	0.00	0.01	0.00	0.01
* Direct costs/indirect costs	0.01	0.05	-0.04	0.10	0.02	0.07
* Direct costs/workload	-37.00	5.00	-42.00	-101.00	-36.00	-65.00
* Indirect costs/workload	-8.00	-18.00	10.00	-74.00	-23.00	-51.00
Access to Care						
* Patient satisfaction (access problems)	-0.09 ***	-0.09 ***	0.00	-0.09 ***	-0.09 ***	0.00
* Number of unique patients	1,248.00	1,728.00 **	-480.00	1,577.00	1,851.00	-274.00
Single Standard of Care						
* Percent primary care enrollment	5.88 *	9.09 ***	-3.21 *	0.57	6.95 ***	-6.38 ***
* Patient satisfaction (coordination problems)	-0.04	-0.04 ***	0.00	-0.02	-0.04 ***	0.02
* Patient satisfaction (continuity problems)	-0.07 **	-0.09 ***	0.02	0.00	-0.07 ***	0.07 ***

Notes: *** = p < .01
** = p < .05
* = p < .10

The only two other significant differences between integrated and comparison groups shown in Exhibit 8.2 are opposite expectation: comparison systems on average increased primary care enrollment and reduced problems in patient satisfaction with continuity significantly more than integrated systems. Operationally integrated systems show the same pattern while early integrated systems show a significant difference only in primary care enrollment.

On most variables, integrating and comparison medical centers showed similar patterns. It appears therefore that the most changes in performance of integrating systems reflect VA-wide trends rather than integration-specific impact

The effects of facility integration on system performance are modest. Integrating systems did not show large pre-post integration changes or different rates of change than comparison groups on most measures. However, the trends are in a positive direction. Improving staffing efficiency and improving it more than comparison groups is an important success. Several cost-related measures of efficiency and redirection of resources did not show significant change or differences but are improving. It is important to recognize that the integrating systems were more costly and had lower workloads than comparison systems before integration. Not surprisingly, then, as shown in Exhibit 8.1, all cost-related measures of efficiency and redirected resources were significantly weaker before integration in integrating facilities than comparison groups for the same periods. These differences appear even though the comparisons are medical centers in the same MCG, a comparison which we believe is the strongest available. The weaker performance in at least one of the pair of integrating facilities undoubtedly contributed to the decision to integrate. By the post-integration measurement, the significant differences between

the weaker starting point, moving closer to the comparison groups is a positive trend. Integration may have been a key element in enabling the facilities to bring to bring their staffing and cost performance closer in line with previously more efficient medical centers. Without integration, their performance may have declined.
Different dynamics seem to hold in terms of access and a single standard of care where integrated systems matched or exceeded comparison groups before integration. Both integrated and comparison systems significantly reduced their access problems after the integration date. Even though integrated systems did not see a greater reduction than comparison groups, the reduction in access problems is positive given early concerns in many systems that integration might viewed by veterans as reducing access by consolidating to one campus services that had previously been provided at all. On the single standard of care dimension, integrating sites were stronger than comparison sites before integration. Primary care enrollment was significantly higher in integrating systems across all three integration groups. Continuity problems were significantly lower in the operationally-integrated group. Thus, while the comparison groups showed significantly higher improvements on primary care enrollment and patient satisfaction with continuity, those improvements simply brought them into line with the integrating systems.
One potential argument against our approach of using a multiple-year average to measure post-integration impact is that those years include a start-up period where performance is often weak. Including the early years may dampen the effect of stronger later years. To explore this possibility, we redid the analyses with one pre-integration observation (FY94) and one post-integration observation as far after the integration date as possible (FY98). The results did not differ from the multi-year analyses.

9. Conclusions

In this report we have looked at the progress of VA integrated systems toward common milestones; at the patterns of structural and cultural integration in different systems; and at the impact of facility integration on staff morale, on service-level resources and services, and on system performance. An important part of the analysis has been to understand the dynamics that lead some systems to move more quickly, integrate more extensively and have a greater impact than others. We expected those dynamics to include the characteristics of the integrating facilities, and the age and structure of the integrated systems. We analyzed the effects of variables in these areas by grouping systems on relevant variables and then conducting analyses of variance and regression analyses to look at their effects.
Among the key conclusions, we found that:

1. **Most VA integrated systems have made substantial progress toward structural integration.**

- There is a rough order, or developmental progression, that most systems follow in bringing two or more facilities together. *Administrative integration* comes first as the new system director is appointed; data systems are merged; the new name and station number are approved. Generally *organizational integration* comes next as functions and reporting relationships are set; the system organization chart is approved; new leadership and service chiefs are appointed; and staff are assigned under the new structure. While organizational integration is an important building block, it does not guarantee integration of the way work is actually done across the system. *Operational integration* usually occurs later in the process: medical by-laws are consolidated; formal policies and clinical protocols are standardized across campuses. Operational integration, through the creation of common formal policies, begins

needed to reach the objectives of creating a single standard of care and achieving efficiencies. (Together, administrative, organizational and operational integration make up what we call structural integration.)

- The integration of *clinical services* progresses at generally the same rate as the integration of *administrative services*. This runs counter to research in the private sector that posited that administrative integration was a precursor to clinical integration. With the emphasis in VA integrated systems on improving access and improving quality by having a single standard of care, most systems appear to integrate their clinical and administrative services simultaneously.

- The *age of the integrating system* is an important, but not the only, determinant of progress. From the directors' reports, older systems (approved before October 1996) are likely to have made more progress than recent systems. The pattern is not uniform, however. Some recently-integrated systems had completed their structural integration at the time of our data collection last spring. Moreover, the role of age appears to be stronger with organizational integration than operational integration. From the managers' survey, we found that older systems are significantly more likely than recent systems to have fewer services remaining separate but not more policies aligned across campuses. This suggests that the age of the integrated system by itself – simply time passing – is less important as integration moves down further the system to affect front-line operations; other factors become more important in speeding up or delaying the progress of integration.
- *Dominant-partner systems* and *systems with a central or exclusive system headquarters* show greater, or at least faster, progress toward structural integration than equal-partner systems and systems with managers divided across campuses. This pattern holds both as measured in directors' reports of milestones passed and as indicated from the managers' survey by significantly lower proportions of services remaining separate across campuses and higher proportions of services with same policies across campuses.

These findings are consistent with the interpretation in our earlier report that systems with a dominant partner appear to act more decisively than systems with equal partners in integrating their systems: the dominant partner is a natural lead in making decisions, plus there is often a complementary array of services that make decisions about combining or consolidating services more obvious than in systems with equal partners and a similar service mix. Therefore, they are more likely to progress more quickly to more extensive organizational and operational integration than equal-partner systems.

The configuration of system headquarters – defined by the physical location of system leaders and service chiefs – overlaps with pre-integration dominance, but is not identical to it. The majority – but not all – systems with exclusive or central headquarters are dominant-partner systems. Having chiefs spread across campuses is associated with less, or at least slower, progress toward structural and operational integration. It may be that an exclusive or central headquarters is important because physical proximity facilitates communication: with the system leadership and service chiefs together, they can interact and communicate more directly and efficiently than if they are spread across campuses and must rely on e-mail, videoconferences or traveling. In addition, an exclusive or central headquarters may signal decisiveness about moving ahead to integrate the system beyond the administrative link at the top. Consistent with this interpretation, the strong relation between system headquarters and pre-integration dominance may reflect the translation of pre-integration dominance into post-integration dominance: one location is clearly in the lead, managers there make decisions and move ahead. In at least some of the systems with leadership spread across campuses, the arrangement may not reflect a

decisions have not been made about fully integrating the system.

2. **Cultural integration is generally higher in systems that are more mature – both in terms of age and extent of integration -- and have a central or exclusive headquarters.**

- From our sites visits in the earlier phase of the study, we concluded that cultural integration was the most difficult aspect of facility integration to accomplish. We also concluded that the key barrier to creating an integrated system was not that the organizational cultures were different, but that staff in each campus identified strongly with their campus and their local colleagues, and distrusted people at the other campuses. What seems important to system integration is that people work together and begin to put system above individual campus. Thus, we concluded that the important dimension of cultural integration is the extent to which staff trust each other and work together productively across campuses – and begin to think of themselves as employees of the larger integrated health care system rather than just their former facility. Therefore, we used system identification as a proxy for cultural integration.

- Across all systems, managers on average judged that just under half the staff identify primarily with the system and half with the campus, with substantial variation around that average.
- System identification tends to be higher where the integrated system is more *mature*. One dimension of maturity is the age of integration: staff are more likely to identify with the system after they have gotten used to the idea. Another dimension is the extent of integration, measured here as operational integration, or shared policies. It appears that where the organizational structure and operations build bridges across campuses, the creation of the integrated system brings changes that affect staff members' daily work and they are therefore more likely to identify with the system and to see an impact of integration. Conversely, where two or more medical centers are joined administratively but continue to operate essentially independently with little change in staff work, there is no reason for staff to change their allegiance to identify with the larger system.
- The relation between central or exclusive headquarters and system identification is at first glance more surprising. Systems with central/exclusive headquarters are often dominant-partner systems with substantial differences in size and complexity. Those differences are usually associated with very different organizational cultures, and one might expect the cultural differences to pose barriers to system identification. One might also expect that having most or all top managers and chiefs based at one location would be viewed negatively by staff at the non-headquarters campuses. They would feel that their facility had been taken over and diminished, and this would lead to a stronger loyalty and solidarity with their own campus. One possible explanation of the contradictory finding is methodological. By surveying managers, we may get a biased perspective when most managers are based at one campus: if those managers do not interact frequently with staff at the other campus, they may understate staff negative feelings and overestimate their system identification. The pattern is so strong here and in later analyses, however, that it seems unlikely that manager bias would be so consistent to account for the full effect. An alternative explanation is that, in fact, a different dynamic holds than the one we expected, at least in some systems. It appears that systems with central or exclusive headquarters also tend to move fairly decisively to integrate the system. From our earlier interviews with staff in integrating systems, we know that they are most anxious about uncertainty. By moving decisively, central and exclusive headquarters systems reduce anxiety. Divided headquarters may reflect a lack of decisiveness, resulting in higher continued anxiety and less cohesiveness — and therefore less system identification.

- Contrary to expectation, pre-integration dominance and proportion of services integrated are not significant predictors of system identification. It appears that while pre-integration dominance strongly influences the location of top management, it is the location of top management – how dominance actually plays out in the integrated system – that is more important to system identification. Similarly, having the same policies across campuses is highly correlated with the service being organizationally integrated as measured by the proportion of services that are integrated. But conceptually, the operational integration associated with aligning policies brings the system closer to integration and therefore is more highly associated with system identification.

- The type of service that the manager leads – clinical or administrative – is not a significant factor in perceptions of system identification. This is another indication that the integration of administrative and clinical services is proceeding together.
- It is important to recognize that while the factors discussed here do have significant relationships with system identification, together they explained only 13% of the variation among system managers in their ratings of system identification. This indicates that while these factors are important in understanding the dynamics of facility integration, many other factors are also influencing managers' perceptions of system integration.

3. Perceived impact of integration is also generally higher in mature systems with exclusive or central system headquarters.

- Across systems, managers rated the impact of integration on their resources and services between neutral and slightly positive: the impacts on patients' access to care and quality of services provided were slightly positive; and the impacts on adequacy of resources provided to their service ability to obtain services or support from other services were neutral. They rated the impact on staff morale lower, halfway between neutral and somewhat negative.

- The model for perceived impact on resources and services is similar but not identical to the model for system identification. Here too, it appears that the maturity of the integration, in terms of extent of operational integration and age, influences perceptions about its impact. The creation of a strong system headquarters is likely to be associated with stronger impact because it is associated with quicker and more extensive integration. Conversely, systems with service chiefs spread equally across campuses may reflect less extensive integration; if there are fewer changes resulting from integration, it follows that perceptions of impact would be lower, or even negative.

- The model for predicting the impact of integration on staff morale is also similar. Perceptions of staff morale are higher – though still generally negative -- in systems with exclusive or central headquarters and with high operational integration, as measured by the alignment of policies across campuses. Here too, it appears that the decisiveness of creating a single headquarters and the impact on staff work brought by consolidating policies mark systems that have moved ahead with their integrated system to an extent that the initial disruption and anxiety of integration is past or passing, and the negative feelings about integration are lessening.

  Age of integration has only a moderate relationship with staff morale, with the oldest group (those approved between January and March 1995) not having a significant relationship and the more recent groups having only marginally significant relationships. It appears that for a while after integration, the passage of time in itself is associated with higher morale, probably as staff get used to the idea of being in an integrated system rather than an independent facility. But time has a weaker effect than structure, and that effect wears out after three years or so.

4. Facility integration appears to have modest effects on system performance.

- Across measures, integrating systems did not show large pre-post integration changes or different rates of change than comparison groups as of fiscal year 1998, though the trends are in a positive direction.
- Improving staffing efficiency and improving it more than comparison groups is an important success. Other measures of efficiency and redirection of resources, while not showing significant differences showed improvement. All cost-related measures of efficiency and redirected resources were significantly weaker before integration in integrating facilities than comparison groups for the same periods – despite having the comparisons drawn from the same Medical Center Group (MCG). But the differences were fewer and smaller after integration. Integration may have been a key element in enabling the facilities to bring to bring their staffing and cost

might instead have declined.

- On measures of access and a single standard of care, integrated systems matched or exceeded comparison groups before integration. Both integrated and comparison systems significantly reduced their access problems after the integration date. Although integrated systems did not see a greater reduction than comparison groups, finding fewer access problems is positive given early concerns in many systems that veterans might feel that integration reduced access by consolidating to one campus services that had previously been provided at all. Comparison groups showed significantly higher improvements on primary care enrollment and patient satisfaction with continuity, but those improvements simply brought them into line with the integrating systems.
- We expected that older systems would show stronger results as the integration had more time to settle in. However, looking only at integrating systems – those approved for integration before fiscal year 1997 – our expectations were not confirmed. We also expected operationally-integrated systems – those with policies shared across campuses in more than 80% of their services – to show stronger results because they were integrated more extensively. We found a stronger effect of efficiency improvements, but not significant differences in other areas.

- These modest effects on performance should be considered in the context of the high costs of facility integration in terms of its disruption to the facilities involved – disruption in terms of anxiety that accompanies large-scale organizational change, distraction from patient care, dislocation and investment in the transition. System leaders may want to explore alternative strategies for accomplishing the same efficiencies, service consolidations and single standard of care and access without fully merging their facilities.

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Appendix A: Methodology

Three sources of data were used to conduct the analyses in this report:

- A survey of directors of VHA systems integrated since January 1999;

- A survey of managers in 19 integrated systems;
- VA administrative databases.

The results of the surveys of managers and directors were used in analyzing integration progress, structure, cultural integration and perceived impact of integration. The administrative databases were used to identify the characteristics of the integrating facilities and in analyzing the effects of integration. Figure A-1 lists each VA integrating system by date of integration approval and shows the data available for each.

1. Analysis of directors' and managers' surveys

The directors and managers of integrated systems were surveyed through the National Quality Improvement Survey (NQIS) administered to all VA medical centers by the MDRC as part of its study of the VHA organizational transformation. Integration supplements were added to the NQIS forms sent to directors and managers in the systems approved for integration between January 1995 and October 1997. The surveys were administered between June 1998 and January 1999. The integration data collected from the directors was updated in April 1999 to incorporate changes in the systems' integration process and to gather information from the four systems approved for integration after October 1997. Directors in 21 of the 23 systems responded to the supplemental items at least once. For those directors who did not update their information in April, we used the fall responses. Two systems did not complete the directors' survey at either time.

Managers in 19 integrated systems responded to the NQIS survey. Of the older integrating systems, the Southern California System of Clinics did not complete the survey, perhaps because it came while the system was newly integrating with West Los Angeles. The four newest integrating systems were not sent the integration supplements. 305 managers responded to the survey (66% of those surveyed) with individual system totals ranging from 7 to 25.

To counter the low sample sizes in individual systems and to look for patterns among the characteristics and structural elements of the integrating systems, we grouped managers' responses by selected variables (such as the location of top management or age of integration) and conducted analyses of variance to test the significance of the differences among groups. We also conducted multivariate regression analyses to examine the relationship among variables in predicting system identification and perceived impact of integration. And we used a related logistic regression technique to examine the independent variables that predict a dichotomous variable, whether a service had shared policies.

Exhibit A-1 Integrating Systems by Data Source

	Integration			
	Approval	**Director's**	**Manager's**	**Administrative**
System	**Date**	**Survey**	**Survey**	**Databases**
Palo Alto	Jan-95	X	X	X

Palo Alto	Jan-95	X	X	X
Central Texas	Mar-95	X	X	X
Connecticut	Mar-95	X	X	X
Maryland	Mar-95	X	X	X
Northern Indiana	Mar-95	X	X	X
Puget Sound	Mar-95		X	X
South Texas	Mar-95	X	X	X
Western New York	Mar-95	X	X	X
Black Hills	May-96	X	X	X
New Jersey	May-96	X	X	X
Pittsburgh	May-96	X	X	X
Chicago	Jun-96	X	X	X
Central Alabama	Sep-96	X	X	X
North Texas	Nov-96	X	X	X
Central Iowa	Dec-96	X	X	X
Greater Nebraska	Apr-97		X	X
Hudson Valley	Apr-97	X	X	X
Eastern Kansas	Jul-97	X	X	(b)
N. Florida/S. Georgia	Oct-97	X	X	(c)
Montana	Mar-98	X	(a)	(b)
Boston	Apr-98	X	(a)	(b)
Greater Los Angeles	Apr-98	X	(a)	(b)
New York Harbor	Jan-99	X	(a)	(b)
Number of Systems:	23	21	19	23

Notes:	(a) = These integrations were announced after the survey samples were drawn and therefore managers did not receive the supplement with integration questions.
	(b) = In these systems, we used the administrative data only for system characteristics. The systems were not included in the analysis of effects because they did not have a full year of post-integration data.
	(c) = North Florida/South Georgia was included in the effects analyses because its data systems merged early and provided a full year of post-integration data.

2. Analysis of the effects of facility integration

We used a multiple time-series design with a comparison group to examine the impact of integration on various measures. Inclusion of a comparison group for each integrated system allowed us to compare changes occurring in integrated systems with VA-wide changes taking place during the same period.

Our overall study period was fiscal year 1994 through fiscal year 1998. Each integrating system's pre- and post-test period was defined in relation to its own date of integration approval and merger of databases. Data for each system's comparison group were drawn for the same pre-post period. Only integrating systems with at least one year of post integration data were included in the study. To increase the stability of the measures, we averaged up to four years of observations in both pre- and post-test periods; the variation in observations was dictated by the years of data available for each system before and after integration. Thus, all integrating systems had five years of data, with one to four years of pre-integration data and one to four years of post-integration data depending on the integration approval date. Similarly, comparison group facilities also included anywhere from one to four years of pre- and post-integration data.

Construction of data series for the integrated systems for the pre-integration period involved two steps. (1) To facilitate pre-post test comparisons, we created a single pre-test score for each system on each measure by summing the value across both integrating facilities for each fiscal year. To calculate measures that are presented as ratios of two measures, we summed each measure used in the denominator and numerator first and then calculated a ratio. (2) To avoid random fluctuations, we then averaged values across all pre-integration years. We used a similar methodology to calculate post-integration values, except that we have only one combined value for each integrated facility, so no adjustments were necessary to calculate ratios. The total number of observations in pre-and post-integration facilities was equal to the total number of integrating systems (n=18).

Construction of the data series for each integrated system's comparison group for the pre-integration period also involved two steps: (1) For each integrating facility, we used the Medical Center Group (MCG) to which the integrating facility belonged to create a comparison group of comparable mission and complexity. For each measure, we calculated the average MCG value for each fiscal year. (2) To avoid random fluctuations, we then averaged each facility's comparison group values across all pre-integration years. Because the comparison groups were not integrating, we kept the observations for each facility's comparison group separate. Thus, the total number of observations in the comparison group was equal to the total number of facilities involved in integrations (n=38). We followed same MCGs after the integration to construct post-integration comparison group data. By tracking the same groups, we estimated the performance that would be expected by integrating facilities if they had not integrated.

The creation of the samples for the older integration and operationally-integrated groups followed the same process.

Exhibit A-2 illustrates the logic used in construction of Integrated System and Comparison Groups, using "total FTEEs" as an example.

Exhibit A-2 Constructing Comparison Groups

	Integrated Systems	Comparison Group
Pre	$[FTEE_{A(pre)} + FTEE_{B(pre)}]$	$FTEE_{W(pre)}$; $FTEE_{X(pre)}$
Post	$FTEE_{AB(post)}$	$FTEE_{W(post)}$; $FTEE_{X(post)}$

where

$FTEE_{A(pre)}$ = Total FTEE of facility A in pre-integration period

$FTEE_{AB(post)}$ = Total FTEE of integrated system AB in post-integration period.
$FTEE_{W(pre)}$ = Average of Total FTEE of Medical Center Group (MCG) facility A belongs to in pre-integration period.
$FTEE_{X(pre)}$ = Average of Total FTEE of Medical Center Group (MCG) facility B belongs to in pre-integration period.
$FTEE_{W(post)}$ = Average of Total FTEE of Medical Center Group (MCG) facility A belongs to in post-integration period.
$FTEE_{X(post)}$ = Average of Total FTEE of Medical Center Group (MCG) facility B belongs to in post-integration period.

Exhibit A-3 gives a description of each measure used in the study. We do not describe the measures that are ratios as they are derived from the measures described here.

Exhibit A-3 Performance Measures

Measure	Source	Description
Patient Count	ARC	The number of patients cared for at the facility in this fiscal year.
Adjusted Facility Workload	ARC	Adjusted Facility Workload is derived from Facility Workload (FACWORK). FACWORK is a workload measure used to describe the intensity of resource requirements for a patient. It is derived from a fiscal year of clinical and cost data. The Adjusted Facility Workload controls for high cost programs in facilities and to remove workload associated with sharing agreements.
Total FTEEs	ARC	The facility's recurring full-time employee equivalents based on those CDR accounts that are included in RPM.
Clinical FTEEs	ARC	The sum of the facility's MD full-time employee equivalents (CDR sub-acct 1061) and all nurses (total nursing FTEE taken from the CDR for cost center 241).
Total Recurring Cost	ARC	Beginning in 1998, the data used to create recurring costs are obtained using the total expenditures for a specified timeframe (e.g. quarterly, annually etc.) These cost data are extracted from the FMS expenditure report (formerly referred to as the 830 report) and adjusted to remove the following costs: all specific purpose funds including education stipends, prosthetics funds, MCCF funds, depreciation and national support center costs. As a result, recurring costs are computed from expenditures made from the general-purpose allocation. Prior to 1998, recurring cost were created from the "obligated allotment" of general purpose funds (not the expended amount).
Total Recurring Direct Cost	ARC	The facility's total recurring direct costs taken from the CDR for those CDR accounts which are included in RPM and have a .0x extension.
Total Recurring Direct Cost	ARC	The facility's total recurring indirect costs taken from the CDR for those CDR accounts which are included in RPM and have a .0x extension.
Primary Care Enrollment	KLF	Percentage of patients who are enrolled in primary care. The number is derived from a question in the National Customer Feedback Center (NCFC)'s annual outpatient survey about whether the patient has single provider or team in charge of his/her care at VA.
Unique Patients	PTF	Total number of unique patients in a fiscal year from VA
Patient Satisfaction: Access	KLF	Access scale from National Performance Data Feedback Center (NPDFC)'s annual outpatient survey. NPDFC is formally known as National Customer Feedback Center (NCFC).
Patient Satisfaction: Continuity	KLF	Continuity scale from National Performance Data Feedback Center (NPDFC)'s annual outpatient survey.
Patient Satisfaction: Coordination	KLF	Coordination scale from National Performance Data Feedback Center (NPDFC)'s annual outpatient survey.

Sources: ARC - Allocation Resource Center – Standard Reports 1 to 10.

KLF - KLFMENU web-site and National Customer Feedback Center (NCFC).
PTF – VA Patient Treatment Files – Inpatient and Outpatient databases at Austin Automation Center

Appendix B: System Performance
Exhibit B-1 Older Systems
Means for Older Integrated Systems and Comparison Groups

	Integrated Systems		*Non-Integration Comparison Groups*	
Variable	Pre-Integration	Post-Integration	Pre-Integration	Post Integration
Cost Savings/System Efficiency				
* Total cost/workload	4,535.00 **	4,490.00	4,181.00	4,168.00
* FTEE/1000 unit workload	70.01	59.20	66.53	56.65
Redirection of Resources to				
* Clinical FTEE/total FTEE	0.39	0.38	0.38	0.37
* Direct costs/total costs	0.70 **	0.70	0.71	0.72
* Direct costs/indirect costs	2.33 **	2.34	2.48	2.52
* Direct costs/workload	3,159.00 *	3,122.00	2,977.00	2,982.00
* Indirect costs/workload	1,376.00 ***	1,368.00	1,204.00	1,186.00
Access to Care				
* Patient satisfaction (access problems)	0.25	0.16	0.24	0.15
* Number of unique patients	14,821	16,069	16,705	18,433
Single Standard of Care				
* Percent primary care enrollment	71.90 **	77.78	66.67	75.76
* Patient satisfaction (coordination problems)	0.36	0.32	0.35	0.31
* Patient satisfaction (continuity problems)	0.29	0.22	0.32	0.23

Notes: Only systems with at least two years of post integration-approval experience - those systems approved before FY97 are included.
Asterisks indicate significant pre-integration differences between integration and comparison systems.
*** = p< .01
** = p< .05
* = p< .10

Sources: National Veterans Health Administration Databases

Exhibit B-2: Operationally Integrated Systems
Means for Operationally Integrated Systems and Comparison Groups

	Integrated Systems		*Non-Integration Comparison Groups*	
Variable	Pre-Integration	Post-Integration	Pre-Integration	Post Integration
Cost Savings/System Efficiency				
* Total cost/workload	4,535.00 **	4,490.00	4,181.00	4,168.00
* FTEE/1000 unit workload	70.01	59.20	66.53	56.65
Redirection of Resources to				
* Clinical FTEE/total FTEE	0.39	0.38	0.38	0.37
* Direct costs/total costs	0.70 **	0.70	0.71	0.72
* Direct costs/indirect costs	2.33 **	2.34	2.48	2.52
* Direct costs/workload	3,159.00 *	3,122.00	2,977.00	2,982.00
* Indirect costs/workload	1,376.00 ***	1,368.00	1,204.00	1,186.00
Access to Care				
* Patient satisfaction (access problems)	0.25	0.16	0.24	0.15
* Number of unique patients	14,821	16,069	16,705	18,433
Single Standard of Care				
* Percent primary care enrollment	71.90 **	77.78	66.67	75.76
* Patient satisfaction (coordination problems)	0.36	0.32	0.35	0.31
* Patient satisfaction (continuity problems)	0.29	0.22	0.32	0.23

Notes: Only systems with at least two years of post integration-approval experience - those systems approved before FY97 are included.
Asterisks indicate significant pre-integration differences between integration and comparison systems.
*** = p< .01
** = p< .05
* = p< .10

Sources: National Veterans Health Administration Databases